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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,763	01/21/2004	Janet Bee Yin Chua	70040066-1	2864

7590 10/18/2005

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EXAMINER	
CANNING, ANTHONY J	
ART UNIT	**PAPER NUMBER**
2879	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/761,763	CHUA ET AL.	
	Examiner	Art Unit	
	Anthony J. Canning	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/04 and 8/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 4, 8, 9, 11, 15, 16, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Mueller et al. (U.S. 6,870,311 B2).

3. As to claims 1, 8, and 15, Mueller et al. disclose a device for emitting output light, said device comprising: a light source that emits first light of a first peak wavelength in a blue wavelength range (see Fig. 3, item 32; column 4, lines 6-21); and a wavelength-shifting region (see Fig. 3, items 36, 38, and 40; column 4, lines 6-21) optically coupled to said light source to receive said first light, said wavelength-shifting region including Group IIB element Selenide-based phosphor material (column 7, lines 65-67; column 8, line 1; zinc and cadmium are both Group IIB elements) having a property to convert some of said first light to second light of a second peak wavelength in a red wavelength range (column 4, lines 6-21), said wavelength-shifting region further including Gallium Sulfide-based phosphor material (column 9, lines 25-38) having a property to convert some of said first light to third light of a third peak wavelength in a green wavelength range (column 4, lines 6-21), said Gallium Sulfide-based phosphor material including at least one Group IIA element selected from a group consisting of Calcium,

Strontium and Barium (column 9, lines 25-37; sulfur substituted gallates include gallium sulfide-based phosphors with at least one Group IIA element), said first light, said second light and said third light being components of said output light (column 4, lines 6-21).

4. As to claims 2, 9, and 16, Mueller et al. disclose the device of claims 1, 8 and 15, wherein the Group IIB element Selenide-based phosphor material of said wavelength-shifting region includes Zinc Selenide (column 7, lines 65-67; column 8, line 1).

5. As to claims 4, 11, and 18, Mueller et al. disclose the device of claim 1 wherein said Group IIB element Selenide-based phosphor material of said wavelength-shifting region includes Cadmium Selenide (column 7, lines 65-67; column 8, line 1).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller et al. (WO 01/24229 A2) in view of Mueller et al. (U.S. 6,870,311 B2).

8. As to claims 1, 8, and 15, Mueller et al. (WO 01/24229 A2) disclose a device for emitting output light and it's method of manufacture, said device comprising: a light source that emits first light of a first peak wavelength in a blue wavelength range (page 5, lines 3-4); and a wavelength-shifting region optically coupled to said light source to receive said first light (page 6, lines 1-8), the wavelength-shifting region including Gallium Sulfide-based phosphor material having a property to convert some of said first light to third light of a third peak wavelength in a green wavelength range, said Gallium Sulfide-based phosphor material including at least one Group IIA element selected from a group consisting of Calcium, Strontium and Barium, said first light, said second light and said third light being components of said output light (page 5, lines 27-33). Mueller et al. (WO 01/24229 A2) fail to disclose that a wavelength-shifting region including Group IIB element Selenide-based phosphor material having a property to convert some of said first light to second light of a second peak wavelength in a red wavelength range.

Mueller et al. (U.S. 6,870,311 B2) disclose a device for emitting output light and it's method of manufacture, said device comprising: a light source that emits first light of a first peak wavelength in a blue wavelength range (column 4, lines 6-21); and a wavelength-shifting region optically coupled to said light source to receive said first light. Mueller et al. further disclose that one of the phosphors in the wavelength-shifting region is a Group IIB element Selenide-

based phosphor (column 7, lines 65-67; column 8, line 1). Mueller et al. further disclose that the Group IIB element Selenide-base phosphor nanoparticles do not substantially absorb light emitted from the device, therefore improving the device's brightness (column 7, lines 42-44).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the device for emitting output light and method of manufacture of Mueller et al. (WO 01/24229 A2) to include a wavelength-shifting region including Group IIB element Selenide-based phosphor material having a property to convert some of said first light to second light of a second peak wavelength in a red wavelength range, as taught by Mueller et al. (U.S. 6,870,311 B2), for the benefit that the Group IIB element Selenide-base phosphor nanoparticles do not substantially absorb light emitted from the device, therefore improving the device's brightness.

9. As to claims 2, 4, 9, 11, 16, and 18, Mueller et al. (WO 01/24229 A2) and Mueller et al. (U.S. 6,870,311 B2) disclose the device of claims 1, 8 and 15. Mueller et al. (U.S. 6,870,311 B2) further discloses that the Group IIB element Selenide-based phosphor material of said wavelength-shifting region includes Zinc Selenide or Cadmium Selenide (column 7, lines 65-67; column 8, line 1). Mueller et al. also disclose that the Group IIB element Selenide-base phosphor nanoparticles do not substantially absorb light emitted from the device, therefore improving the device's brightness (column 7, lines 42-44).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the device for emitting output light and method of manufacture of Mueller et al. (WO 01/24229 A2) to include that the Group IIB element Selenide-based phosphor material of said wavelength-shifting region includes Zinc Selenide or

Cadmium Selenide, as taught by Mueller et al. (U.S. 6,870,311 B2), for the benefit that the Group IIB element Selenide-base phosphor nanoparticles do not substantially absorb light emitted from the device, therefore improving the device's brightness.

10. As to claims 3, 5, 6 and 10, 12, 13 and 17, 19, and 20, Mueller et al. disclose the claimed invention except for the particular phosphor disclosed in each of the above claims. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the phosphors of the above claims, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

11. As to claims 7 and 14, Mueller et al. (WO 01/24229 A2) and Mueller et al. (U.S. 6,870,311 B2) disclose the device of claims 1 and 8. Mueller et al. (WO 01/24229 A2) further disclose that the light source includes a light emitting diode die (see Field of Invention).

Pertinent Prior Art

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Thornton et al. (U.S. 4,176,299) disclose a light-emitting element using copper activated zinc selenide as the red phosphor (column 7, lines 60-68; column 8, lines 1-4).

Schetzina (U.S. 5,294,833) disclose using a cadmium zinc selenide as a phosphor (column 1, lines 24-28).

Danielson et al. (U.S. 2004/0124758 A1) disclose a light-emitting device using $BaGa_4S_7$:Eu (see Abstract).

Contact Information

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Canning whose telephone number is (571)-272-2486. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh D. Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anthony Canning
12 October 2005

ASHOK PATEL
PRIMARY EXAMINER